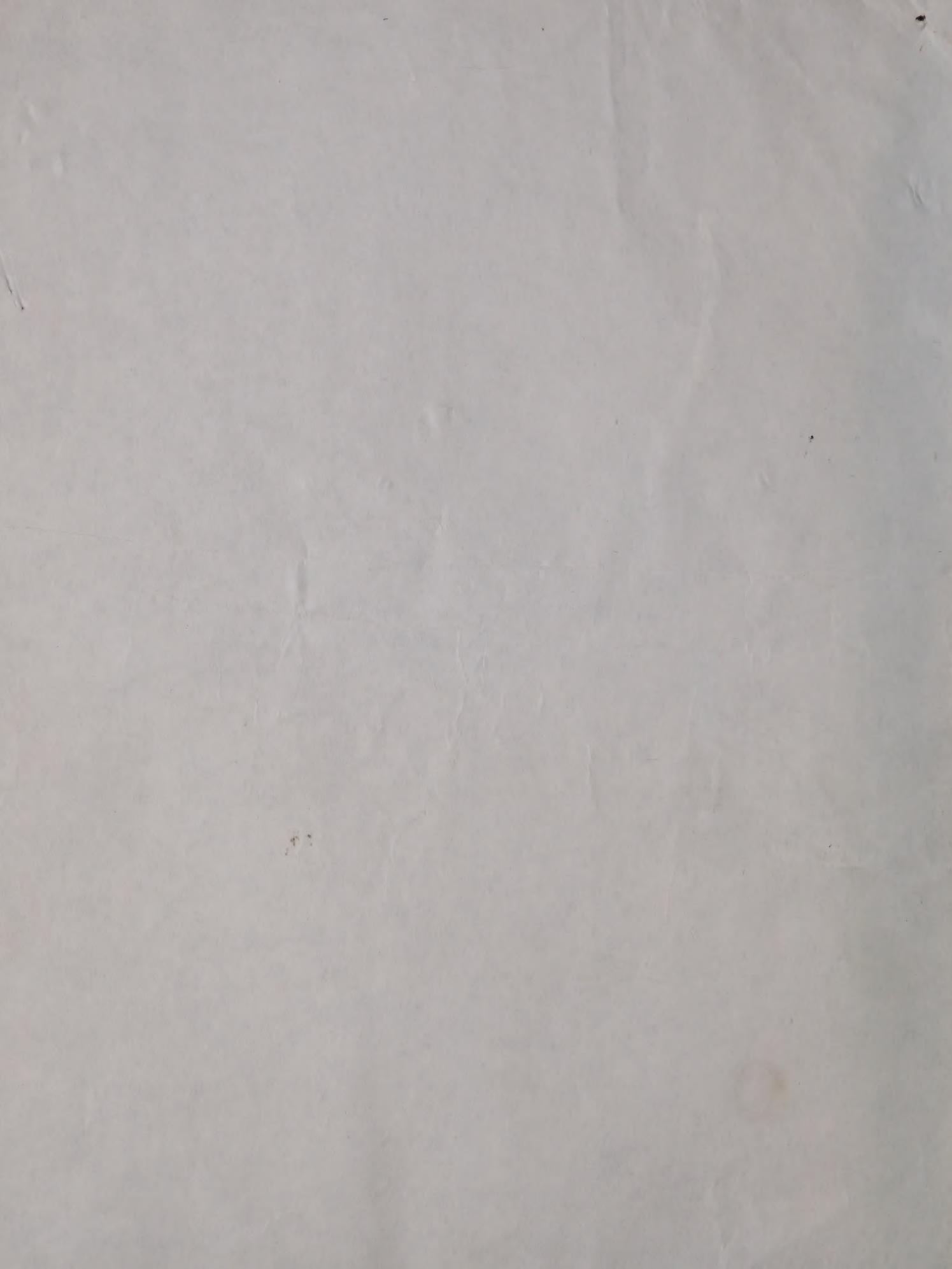


TECHNICAL MANUAL

COUNTING APPARATUS, BACTERIAL COLONY, QUEBEC
Model No. 4200, NSN 6640-01-034-0479

503

Hellige, Inc.
877 Stewart Ave.
Garden City, N.Y. 11530



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COUNTING APPARATUS, BACTERIAL COLONY, 115 VOLTS AC.

SERVICE DATA

Hellige Improved Dark Field
Colony Counter Model No.4200.

Military Model NSN 6640-01-
034-0479.

A. INTRODUCTION

1. Applications

The Hellige Bacterial Colony Counting Apparatus utilizes Dark Field Illumination to assure accurate and reliable counting of surface and subsurface bacterial colonies grown in all types of agar. The Hellige Colony Counter is indispensable for counting colonies in modern bacterial laboratories in hospitals, public health stations, water and sewage plants, dairies, breweries, etc..

2. Design

The design of the instrument is based on the recommendations of Drs. J. Archambault, J. Curot, and M. H. McCrady of the Quebec Ministry of Health, Montreal, Quebec. (See American Journal of Public Health, Vo.27, No.8, pp.809-812.) The Hellige Improved Dark Field Colony Counter conforms completely to the official specifications of the American Public Health Association and the American Water Works Association.

3. Features

The instrument provides even illumination and magnification to assure reproducible results of the highest accuracy. Rapid counts can easily be made over prolonged periods as a result of the improved design affording maximum working convenience. A built-in circular lamp and jet black, reflection-free background provide the most efficient conditions for counting, because controlled light strikes the Petri dish uniformly from all angles. The colonies and the rulings of the counting plate appear intense and sharply defined. The illumination is bright, yet completely glare-free...no direct light can reach the operator's eyes. Magnification is provided for comfortable viewing by a large polished lens which covers the entire illuminated field. For increased magnification, an auxiliary lens can be instantly positioned under the standard lens of the instrument. The lens position is fully adjustable to suit individual needs. A simple slider automatically centers Petri dishes over the rulings of the counting plate. A counting plate with standard Wolffhuegel ruling is supplied with the apparatus.

HELLIGE, INC.
877 Stewart Avenue
Garden City, N. Y. 11530

A. 3. Continued

The sloping front of the instrument permits counts to be made from a convenient working position. The housing is constructed of heavy gauge welded steel and measure 9 x 7 x 8 inches approximately, net weight 11 pounds, packed weight 14 pounds. It is coated with a smooth, tough finish to resist dirt and laboratory fumes. The sturdy construction of this economical, superior counter will provide years of dependable service...its modern, unique design assures easy and reproducible counts of highest accuracy. The Military version is supplied with an auxiliary tilting device which allows easy adjustment of the front panel slope for added convenience of the operator.

B. SETUP

1. Unpacking

The instrument is supplied complete, no assembly is required; simply remove from the carton and plug into any 110 volt AC, grounded, 3 pin socket.

2. Adjustment

The Military model may be tilted for the convenience of the operator by turning the adjustable knurled feet on the bottom rear of the instrument housing. Make sure both feet are adjusted to prevent rocking.

3. Lens Adjustment

The position of the magnification lens can be easily adjusted by sliding up or down. It will remain in the adjusted position.

4. Auxiliary Lens Installation

An additional lens can be installed to increase magnification where required. Pull lens up out of its nylon bushing and insert auxiliary lens on the rod. Reinsert rod carefully into bushing.

C. OPERATION

1. Taking Counts

Place the Petri dish on the slider, loosen nut, and raise or lower the dish to center the portion to be counted over the rulings of the Counting Plate, tighten nut to hold securely.

2. Bulb Replacement

This instrument uses a 22 watt round fluorescent bulb. When replacement is necessary, unplug instrument from electrical outlet. Remove the three screws, one at each side and one on top of the housing. After sliding the lens down to its lowest position, the front of the instrument may be tilted forward on its hinge so that the interior becomes readily accessible. Carefully remove the bulb from its three spring clips and gently pull out plug from lamp socket. Insert new lamp into spring clips after inserting plug. Swing back the front of instrument and replace the three screws.

3. Counting Plate Replacement

Tilt front of instrument back after removing screws as instructed under "Bulb Replacement." Carefully strip off the black tape which seals the Counting Plate to the inside of the housing. Unscrew brass nut which secures Counting Plate catch, slide Plate out carefully. Slide in new Plate, replace Counting Plate catch and tighten brass nut to hold firmly. Reseal securely with new tape. Swing back the front of instrument and replace the three screws.

4. Cleaning of Instrument

The outside of the instrument, including the Counting Plate, may be wiped clean with a lint free cloth moistened with a mild detergent solution and water. Gently wipe dry with a soft cloth. When necessary, the instrument should be opened up as instructed in "Bulb Replacement" and the interior, especially the black velvet, may be brushed clean, removing dust and dirt with a soft brush.

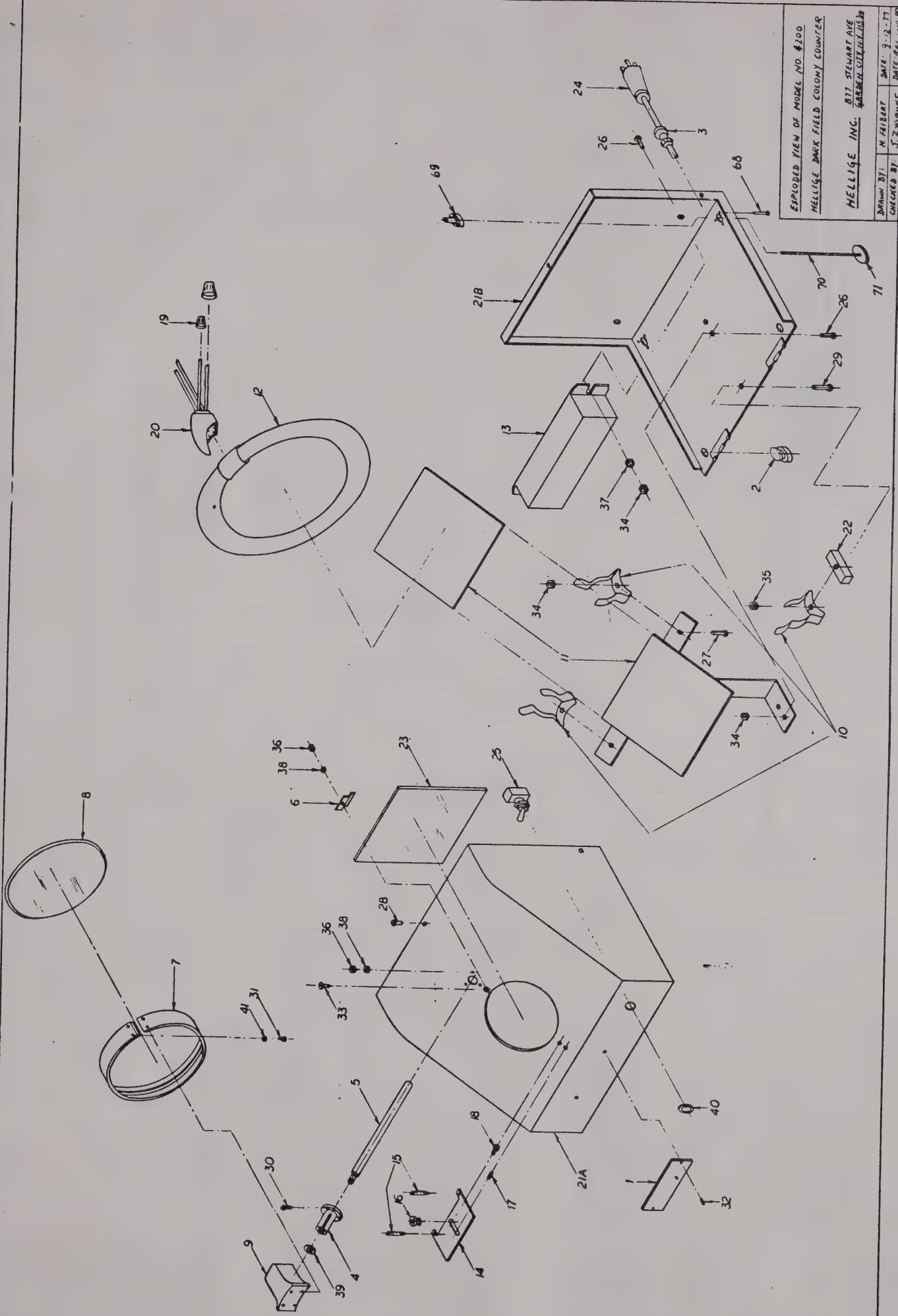
PARTS LIST

COUNTING APPARATUS, BACTERIAL COLONY, 115 VOLT AC
MILITARY VERSION NSN 6640-01-034-0479, COMMERCIAL VERSION NO.4200

INDEX NO.	HELLIGE PART NO.	DESCRIPTION	QUANTITY
1	4200-P18	Nameplate	1
2	4200-P19*	Bumper, black, flanged, Salisbury No.FB-162	1
3	4200-P27*	Bushing, strain relief, Heyman No.SR-5N-4	1
4	4200-P4	Bushing, support	1
5	4200-P5	Lens Arm	1
6	4200-P8	Catch, Counting Plate	1
7	4200-P9	Lens Rim	1
8	4200-P10	Lens	1
9	4200-P11	Lens Clamp	1
10	4200-P13*	Clip, finger grip adjustable, Platt No.1-B	1
11	4200-P14/26	Bracket Assembly, plate and support, lined with black velvet	1
12	4200-P15*	Lamp, fluorescent, Circline, 22 watts, GE No.Fc8T9/CW or equal	1
13	4200-P16*	Ballast, fluorescent lamp, 22 watt, Advance No.RLQ 122 or equal	1
14	4200-P20	Dish support	1
15	4200-P21	Button, dish support	1
16	4200-P22	Nut, knurled	1
17	4200-P24	Button	1
18	4200-P25	Stud, threaded	1
19	4200-P28*	Nut, large wire, Ideal No.73B	1
20	4200-P29*	Lamp Socket, Circline, Leviton No.408 or equal	1
21-A }	4200-P35	Housing, painted	1
21-B }	4200-P40	Lamp block	1
22	4210-1	Counting Plate, screened, with Wolffhuegel ruling	1
24	4200-P31*	Cord Set, 3 wire, UL approved	1
25	4200-P17*	Switch, single throw, 6 AMP, Carling No.110-S-73	1
	4200-DIR	Directions, supplied with instrument	1
26	4200-P45*	Screw, 10-32 x 1/2 Round Hd. N.P.	4
27	4200-P46*	Screw, 10-32 x 1/2 Round Hd. Brass	2
28	4200-P47*	Screw, 6-32 x 1/4 Round Hd. N.P.	3
29	4200-P48*	Screw, 8-32 x 3/4 Round Hd. N.P.	1
30	4200-P50*	Screw, 4-40 x 3/8 Round Hd. N.P.	3
31	4200-P51*	Screw, 2-56 x 1/4 Filister Hd. N.P.	6
32	4200-P53*	Screw, 00 x 3/16 Steel Drive, P-K, Type U	2
33	4200-P54*	Screw 4-40 x 3/16 Flat Hd, Undercut	1
34	4200-P55*	Nut, 10-32 Hexagonal, Brass	6
35	4200-P56*	Nut, 8-32 Hexagonal, Brass	1
36	4200-P57*	Nut, 4-40 Hexagonal, Brass	4
37	4200-P58*	Lock Washer No.10	4
38	4200-P59*	Lock Washer No.4	4
39	4200-P60*	Washer, 1/4", Plain, N.P.	1
40	4200-P61*	Ring Nut, for switch	1
41	4200-P67*	Washer, No.2, Plain, N.P.	3

*Available commercially.

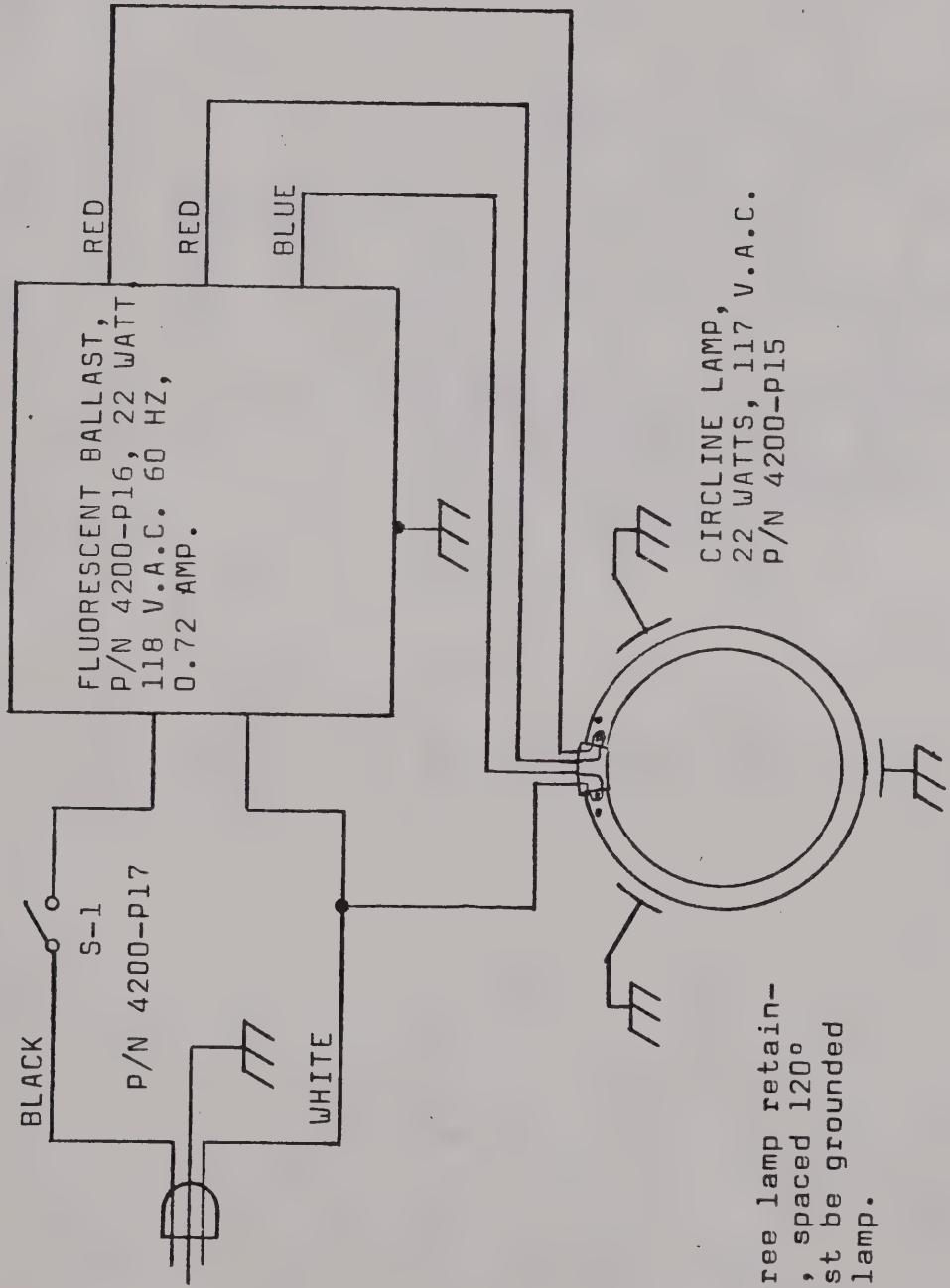
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EXPLODED VIEW OF MODEL NO. 4200
HELLIGE DARK FIELD COLONY COUNTER

HELLIGE INC. 817 STEWART AVE.
GARDIN CITY, MINNESOTA

DRAWN BY: H. FERBER DATE 9-12-77
CHECKED BY: J. Z. SCHAUER DATE 9-12-77



CIRCLINE LAMP,
 22 WATTS, 117 V.A.C.
 P/N 4200-P15

DATE 01/29/11
 DWN BY E.E. SPEC.
 TRACED BY E.E. APPD.
 DESIGN APP'D.

MAT. SPEC.		GRADE	SUBJECT MODEL NO. 4200 COLONY COUNTER SCHEMATIC WIRING DIAGRAM	
REMARKS				
FT	PER 100	N. D.	DATE	E. E. SPEC.
IRS			01/29/11	E. E. APPD.
				DESIGN APP'D.

HELLIGE, INC. 877 STEWART AVE.
GARDEN CITY, N.Y.

<u>INDEX NO.</u>	<u>HELLIGE PART NO.</u>	<u>DESCRIPTION</u>	<u>QUANTITY</u>
68	4200-P68	Screws, 4-40 X $\frac{1}{2}$ round hd.	6
69	4200-P69	Bushing	2
70	4200-P70	Threaded rod	2
71	4200-P71	Knurled leg	2

E.

OPTIONAL ACCESSORIES

<u>HELLIGE PART NO.</u>	<u>DESCRIPTION</u>
4200-1C	Instrument Cover, plastic, dust proof (included with commercial version)
249-2	Voltage reducer, this simple plug-in unit reduces 220 volts AC to the power required by the Counting Apparatus. The Voltage Reducer is merely connected to the cord of the Colony Counter and is then inserted into the 220 volt outlet.
4215	Auxiliary Lens, complete

F. WARRANTY

Hellige, Inc. instruments are unconditionally guaranteed from defects in material and workmanship for a period of 90 days from date of shipment from our plant, with the exception expendable parts such as lamps, batteries, glassware, etc., which are guaranteed for a period of 30 days only. This warranty does not apply if instrument is improperly used or mishandled.

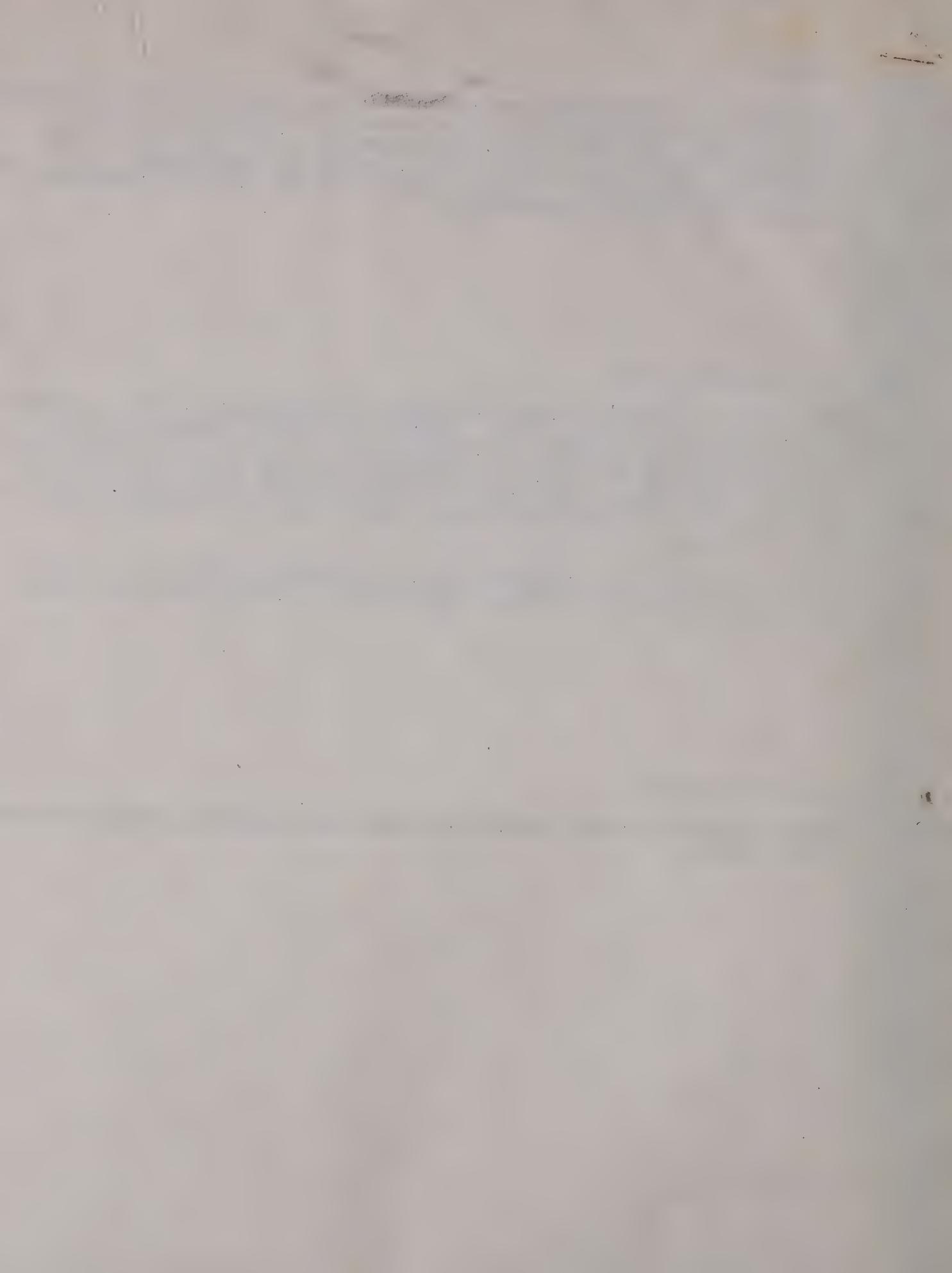
G. RETURNS AND CLAIMS

No returns will be accepted for credit or adjustment without written permission from Hellige, Inc.. Before returning, please indicate, as completely as possible, the reason for the return furnishing the serial number of the instrument and the Hellige invoice or contract number. All returns must be well packed and insured, and prepaid to Hellige, Inc., 877 Stewart Avenue, Garden City, N.Y. 11530, Attn: Return Goods.

Repairs of returned equipment, with expired warranty, will only be made upon receipt of customer authorization, after supplying repair estimate.

H. PRODUCT CHANGES

Specifications on the commercial model are subject to change without prior notice.



COUNTING APPARATUS

BACTERIAL COLONY, 115 VOLTS AC

SERVICE DATA

NSN 6640-01-034-0479

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COUNTING APPARATUS, BACTERIAL COLONY, 115 VOLTS AC.

S E R V I C E D A T A

Hellige Improved Dark Field
Colony Counter Model No.4200.

Military Model NSN 6640-01-
034-0479. Per MIL-C-37760

A. INTRODUCTION

1. Applications

The Hellige Bacterial Colony Counting Apparatus utilizes Dark Field Illumination to assure accurate and reliable counting of surface and subsurface bacterial colonies grown in all types of agar. The Hellige Colony Counter is indispensable for counting colonies in modern bacterial laboratories in hospitals, public health stations, water and sewage plants, dairies, breweries, etc..

2. Design

The design of the instrument is based on the recommendations of Drs. J. Archambault, J. Curot, and M. H. McCrady of the Quebec Ministry of Health, Montreal, Quebec. (See American Journal of Public Health, Vo.27, No.8, pp.809-812.) The Hellige Improved Dark Field Colony Counter conforms completely to the official specifications of the American Public Health Association and the American Water Works Association.

3. Features

The instrument provides even illumination and magnification to assure reproducible results of the highest accuracy. Rapid counts can easily be made over prolonged periods as a result of the improved design affording maximum working convenience. A built-in circular lamp and jet black, reflection-free background provide the most efficient conditions for counting, because controlled light strikes the Petri dish uniformly from all angles. The colonies and the rulings of the counting plate appear intense and sharply defined. The illumination is bright, yet completely glare-free...no direct light can reach the operator's eyes. Magnification is provided for comfortable viewing by a large polished lens which covers the entire illuminated field. For increased magnification, an auxiliary lens can be instantly positioned under the standard lens of the instrument. The lens position is fully adjustable to suit individual needs. A simple slider automatically centers Petri dishes over the rulings of the counting plate. A counting plate with standard Wolffhuegel ruling is supplied with the apparatus.

HELLIGE, INC.
877 Stewart Avenue
Garden City, N. Y. 11530

A. 3. Continued

The sloping front of the instrument permits counts to be made from a convenient working position. The housing is constructed of heavy gauge welded steel and measure 9 x 7 x 8 inches approximately, net weight 11 pounds, packed weight 14 pounds. It is coated with a smooth, tough finish to resist dirt and laboratory fumes. The sturdy construction of this economical, superior counter will provide years of dependable service...its modern, unique design assures easy and reproducible counts of highest accuracy. The Military version is supplied with an auxiliary tilting device which allows easy adjustment of the front panel slope for added convenience of the operator.

B. SETUP

1. Unpacking

The instrument is supplied complete, no assembly is required; simply remove from the carton and plug into any 110 volt AC, grounded, 3 pin socket.

2. Adjustment

The Military model may be tilted for the convenience of the operator by turning the adjustable knurled feet on the bottom rear of the instrument housing. Make sure both feet are adjusted to prevent rocking.

3. Lens Adjustment

The position of the magnification lens can be easily adjusted by sliding up or down. It will remain in the adjusted position.

4. Auxiliary Lens Installation

An additional lens can be installed to increase magnification where required. Pull lens up out of its nylon bushing and insert auxiliary lens on the rod. Reinsert rod carefully into bushing.

C. OPERATION

1. Taking Counts

Place the Petri dish on the slider, loosen nut, and raise or lower the dish to center the portion to be counted over the rulings of the Counting Plate, tighten nut to hold securely.

2. Bulb Replacement

This instrument uses a 22 watt round fluorescent bulb. When replacement is necessary, unplug instrument from electrical outlet. Remove the three screws, one at each side and one on top of the housing. After sliding the lens down to its lowest position, the front of the instrument may be tilted forward on its hinge so that the interior becomes readily accessible. Carefully remove the bulb from its three spring clips and gently pull out plug from lamp socket. Insert new lamp into spring clips after inserting plug. Swing back the front of instrument and replace the three screws.

3. Counting Plate Replacement

Tilt front of instrument back after removing screws as instructed under "Bulb Replacement." Carefully strip off the black tape which seals the Counting Plate to the inside of the housing. Unscrew brass nut which secures Counting Plate catch, slide Plate out carefully. Slide in new Plate, replace Counting Plate catch and tighten brass nut to hold firmly. Reseal securely with new tape. Swing back the front of instrument and replace the three screws.

4. Cleaning of Instrument

The outside of the instrument, including the Counting Plate, may be wiped clean with a lint free cloth moistened with a mild detergent solution and water. Gently wipe dry with a soft cloth. When necessary, the instrument should be opened up as instructed in "Bulb Replacement" and the interior, especially the black velvet, may be brushed clean, removing dust and dirt with a soft brush.

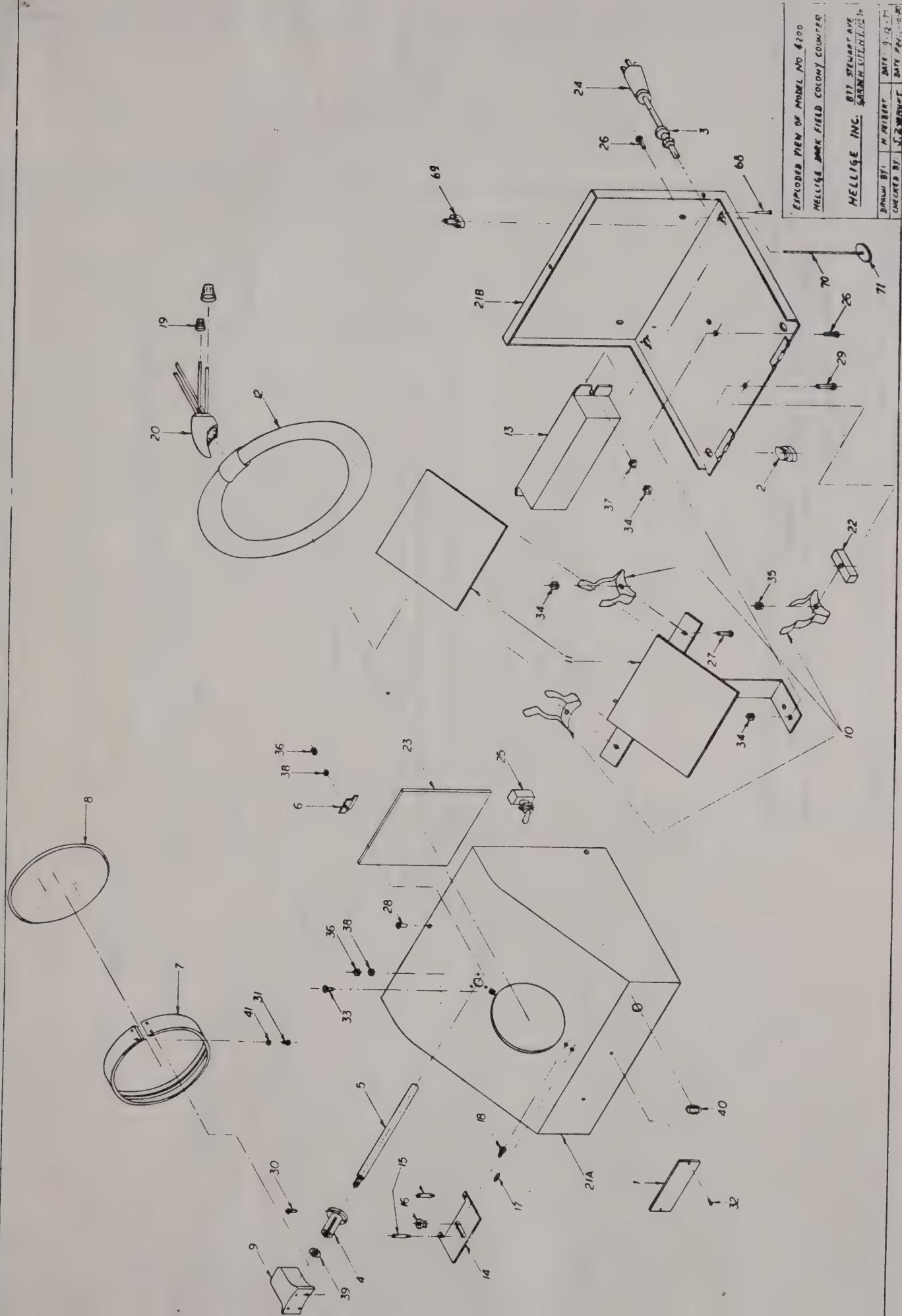
PARTS LIST

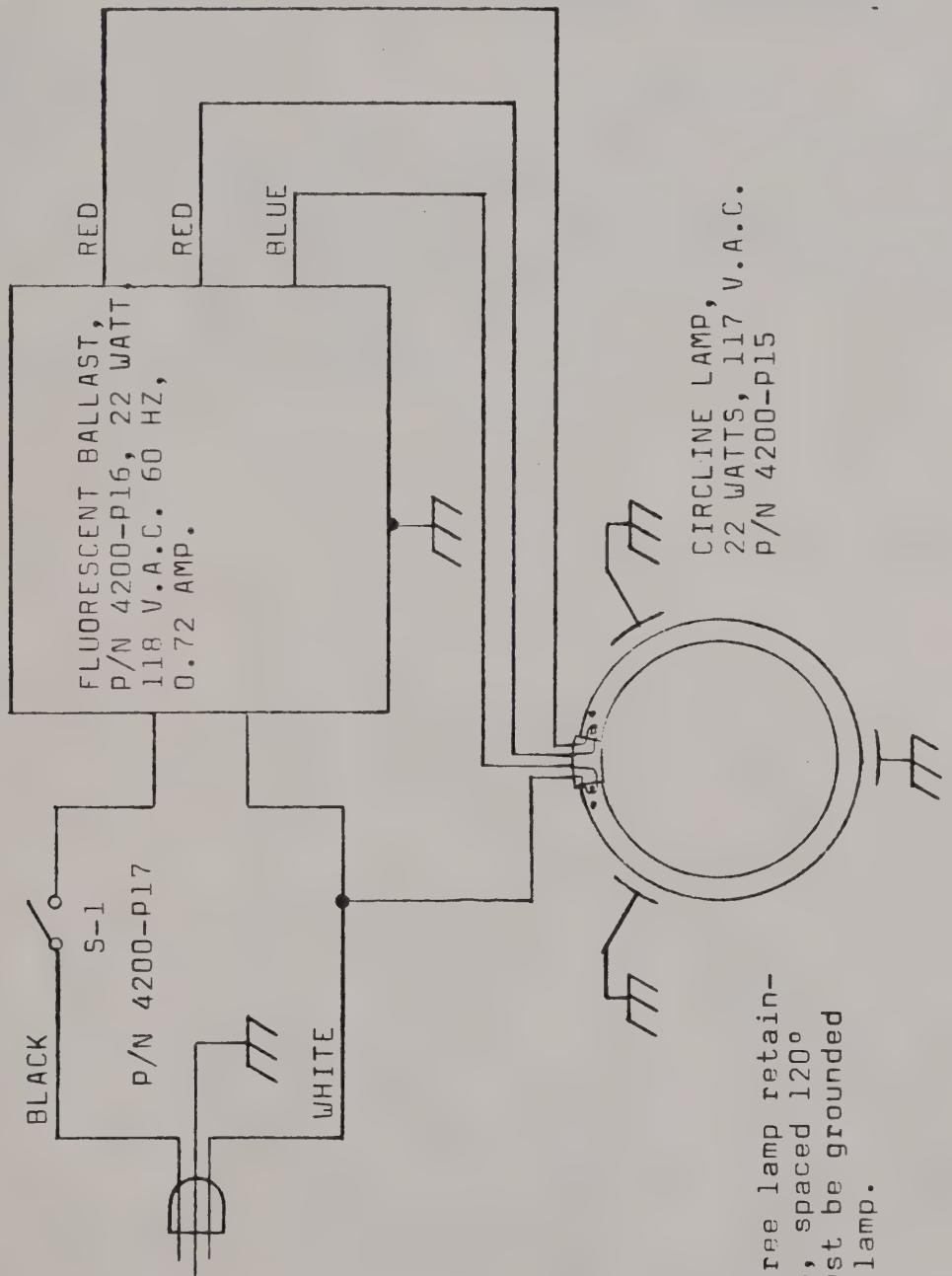
COUNTING APPARATUS, BACTERIAL COLONY, 115 VOLT AC
 MILITARY VERSION NSN 6640-01-034-0479, COMMERCIAL VERSION NO.4200

I	EX	HELLIGE PART NO.	DESCRIPTION	QUANTIT
1		4200-P18	Nameplate	1
2		4200-P19*	Bumper, black, flanged, Salisbury No.FB-162	1
3		4200-P27*	Bushing, strain relief, Heyman No.SR-5N-4	1
4		4200-P4	Bushing, support	1
5		4200-P5	Lens Arm	1
6		4200-P8	Catch, Counting Plate	1
7		4200-P9	Lens Rim	1
8		4200-P10	Lens	1
9		4200-P11	Lens Clamp	1
10		4200-P13*	Clip, finger grip adjustable, Platt No.1-B	1
11		4200-P14/26	Bracket Assembly, plate and support, lined with black velvet	1
12		4200-P15*	Lamp, fluorescent, Circline, 22 watts, GE No.Fc8T9/CW or equal	1
13		4200-P16*	Ballast, fluorescent lamp, 22 watt, Advance No.RLQ 122 or equal	1
14		4200-P20	Dish support	1
15		4200-P21	Button, dish support	1
16		4200-P22	Nut, knurled	1
17		4200-P24	Button	1
18		4200-P25	Stud, threaded	1
19		4200-P28*	Nut, large wire, Ideal No.73B	1
20		4200-P29*	Lamp Socket, Circline, Leviton No.408 or equal	1
-A } 21-B }		4200-P35	Housing, painted	1
		4200-P40	Lamp block	1
22		4210-1	Counting Plate, screened, with Wolffhuegel ruling	1
24		4200-P31*	Cord Set, 3 wire, UL approved	1
25		4200-P17*	Switch, single throw, 6 AMP, Carling No.110-S-73	1
		4200-DIR	Directions, supplied with instrument	1
26		4200-P45*	Screw, 10-32 x 1/2 Round Hd. N.P.	4
27		4200-P46*	Screw, 10-32 x 1/2 Round Hd. Brass	2
28		4200-P47*	Screw, 6-32 x 1/4 Round Hd. N.P.	3
29		4200-P48*	Screw, 8-32 x 3/4 Round Hd. N.P.	1
30		4200-P50*	Screw, 4-40 x 3/8 Round Hd. N.P.	3
31		4200-P51*	Screw, 2-56 x 1/4 Filister Hd. N.P.	6
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35		4200-P56*	Nut, 8-32 Hexagonal, Brass	1
36		4200-P57*	Nut, 4-40 Hexagonal, Brass	4
37		4200-P58*	Lock Washer No.10	4
38		4200-P59*	Lock Washer No.4	4
39		4200-P60*	Washer, 1/4", Plain, N.P.	1
40		4200-P61*	Ring Nut, for switch	1
41		4200-P67*	Washer, No.2, Plain, N.P.	3

* Available commercially.

Cont'd





REMARKS		MAT. SPEC.		GRADE	
FT	PER	N.D.			E.E. SPEC.
LBS	100				DATE
SUBJECT MODEL NO. 4200 COLONY COUNTER SCHEMATIC WIRING DIAGRAM					
D.W. BY <i>[Signature]</i>		10/19/77		E.E. APP-D.	
TRACED BY				DESIGN APP-D.	
CHECKED BY				DATE	
HELLIGE, INC. 877 STEWART AVE. GARDEN CITY, N.Y.					

<u>INDEX NO.</u>	<u>HELLIGE PART NO.</u>	<u>DESCRIPTION</u>	<u>QUANTITY</u>
68	4200-P68	Screws, 4-40 X $\frac{1}{4}$ round hd.	6
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70	4200-P70	Threaded rod	2
71	4200-P71	Knurled leg	2

E.

OPTIONAL ACCESSORIES

<u>HELLIGE PART NO.</u>	<u>DESCRIPTION</u>
4200-1C	Instrument Cover, plastic, dust proof (included with commercial version)
249-2	Voltage Reducer, this simple plug-in unit reduces 220 volts AC to the power required by the Counting Apparatus. The Voltage Reducer is merely connected to the cord of the Colony Counter and is then inserted into the 220 volt outlet.
4215	Auxiliary Lens, complete

F. WARRANTY

Hellige, Inc. instruments are unconditionally guaranteed from defects in material and workmanship for a period of 90 days from date of shipment from our plant, with the exception expendable parts such as lamps, batteries, glassware, etc., which are guaranteed for a period of 30 days only. This warranty does not apply if instrument is improperly used or mishandled.

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